

What is claimed is:

1) A system for precise position registration comprising:

a. a sample holder including

i. a base; and

ii. three support posts;

b. a sample including:

i. a body having a top and a bottom side;

ii. a cylindrical depression in said bottom side of said body;

and

iii. a U-groove depression in said bottom side of said body.

2) The position registration system of claim 1 wherein said support posts

include:

a. a first support post having a first conical tip;

b. a second support post having a second conical tip; and

c. a third support post having a hemispherical tip.

3) The position registration system of claim 2 wherein

a. said cylindrical depression includes a side wall and an inner

surface within said body; and

b. said U-groove depression includes short and long side walls and an

inner surface.

- 4) The position registration system of claim 3 wherein
- a. said first conical tip of said first support post includes an outer surface; and
 - b. said second conical tip of said second support post includes an outer surface.

5

- 5) The position registration system of claim 4 wherein said sample holder is located under said sample and:

- a. said first conical tip of said first support post engages said side wall of said cylindrical depression in such a manner that said first conical tip is offset from said inner surface of said cylindrical depression;
- b. said second conical tip of said second support post engages said short side walls of said U-groove depression in such a manner that said second conical tip is offset from said inner surface of said U-groove depression; and
- c. said hemispherical tip of said third support post engages said bottom side of said body.

10

15

20

- 6) The position registration system of claim 5 wherein said support posts are cylindrical in shape.

7) The position registration system of claim 3 wherein said outer surfaces of said first and second conical tips, said side wall of said cylindrical depression, and said short side walls of said U-groove depression have smooth walls.

5 8) The position registration system of claim 1 which includes an accuracy, as measured in x, y repeatability, of at least 140 μm .

10